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Livestock News

Jacob R. Segers, Ph.D. – Editor

Changing the Guard…

I should begin this issue with an apology to you all. I have not been able to produce an issue of ADS Livestock News in quite some time. Things have been extremely busy on the Tifton Campus this summer, and the necessary time has not been available to compile another issue since the spring. I title this section "Changing the Guard" because part of our work this summer has been put toward growing our program in beef cattle extension and research. Our first addition has already taken up residence at our Tifton Campus location. As many of you know, Ms. Patsie Cannon retired from her position in June, 2015. Ms. Grace Nyhuis will be joining us as the new Beef Cattle Extension Programs Coordinator. Grace comes to UGA Beef Extension from the United Braford Breeders where she served as Executive Director. Her experience with breed associations, and bull development programs will be a welcomed asset to our team. Our second new hire will be taking residence with us in January. As Dr. Gary Hill has decided to hang up his spurs and return to his native North Carolina, his post will be occupied by Dr. Jennifer Johnson. Dr. Johnson is currently and assistant professor of Forage Agronomy at Auburn University. Her research program will focus on forage production and nutritional characteristics of forage crops in beef cattle operations. If you meet Dr. Johnson in your travels to Tifton, she is also due congratulations on her coming to marriage this October to Tifton-native Dale Tucker. We are energized and optimistic as our beef cattle team in South Georgia approaches critical mass. Our goal is to provide a comprehensive extension, research and instruction program that will prepare our students and inform Georgia's cattlemen with the most current, scientifically-verified principles so they are empowered to improve the quality, safety and efficiency of beef in Georgia.

As always, I am thankful to work with Georgia's agricultural industry, and wish you every success in all that you do. Warmest regards.

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Using the Sun to Protect Water Quality

By Gary L. Hawkins, Ph.D., Water Resource Management and Policy Specialist, Department of Crop and Soil Science, UGA

Just think about a warm to hot summer afternoon (or really anytime), the sun is beating down on your back, where would you like to be and what would you like to be doing? My suggestion would be that you would like to be under a shade tree with a cold glass of water in your hand or maybe even in a cool pool of water. Well livestock are like us, they would like to get a cool drink of water or be in a good pool of water or even be under a shade tree. But, sometimes the only water supply the livestock have is the creek that runs through the middle or along the edge of a pasture. So, the way we provide water for these animals is to let them in the water to cool off, drink and then deposit waste materials. The movement of livestock up and down banks, the lounging in the water and the depositing waste materials all potentially pollutes the water source they drink from or the water other animals and we use downstream. So, how do we remedy this potential problem? One way is through removing the animals from the water source and using the SUN.

By removing the animals, we can solve one problem but potentially form another. That being - how to get water to the animals. In remote locations, the SUN can be the reason for animals being in the water, but also can be a very valuable partner. By using the sun to operate solar powered pumps, water can be pumped from the water source to any location where you may have the livestock and even to multiple locations or pastures. Solar powered livestock watering systems can be pricy, but on a comparative basis (compared to running electric lines) solar can be very competitive and even be cheaper than running power. Typical solar powered livestock watering systems consist of a solar panel, a pump, a control panel and a tank. Solar powered livestock watering systems are designed for each specific situation based on distance from surface water source to tank or trough or depth of well and pumping height. The cost of the system also changes based on the size pump, number of panels and tank or trough used. Even with the various options for a solar powered system, the average cost of a system will be in the neighborhood of $6000. This could be lower with a shallow well and very little lifting of water required to a little higher for higher flows and a high pumping height.

The use of solar powered livestock watering systems is a good way to provide cool water for livestock while at the same time protecting the surface water source used for the animals as well as providing a clean water downstream of your pasture(s). These systems are specific to the individual pasture, water source location and number of animals requiring water. If you are interested in such a system for your livestock operation there are a few different options. You can check with your local UGA County Extension Agent at 1-800-ASK-UGA1 or your local NRCS office. Your Extension Agent can get information on the use of such pumping systems and local NRCS office may have funding available for the installation of a solar powered livestock watering system, but it is based on the individual districts as to the availability of funds so check with your local office.

So, if you have livestock in the surface water source they use for drinking think of how you would feel if you were lounging in the same water you had to drink. Then think that there is a source of electricity above your head that is causing you to lounge in the water to stay cool that can provide a cool drink of water while protecting the quality of the water you are drinking – that being the SUN.

Livestock watering using the sun as the source of electricity. The solar panels provides the needed power to run the pump and lift the groundwater over 200 feet to the tank and then the trough

Waters of the United States – The Final Rule

By Gary L. Hawkins, Ph.D., Water Resource Management and Policy Specialist, Department of Crop and Soil Science, UGA

On June 29, 2015, the EPA and The Corps of Engineers had published in the Federal Register (Vol. 80, No. 124) the Final Rule on the Clean Water Rule: Definition of "Waters of the United States" with the rule becoming effective on August 28, 2015. With this fact sheet, I would like to provide some of what is printed in the Federal Register.

The final rule defines what waters of the US are considered to be jurisdictional by rule. There are eight categories of jurisdictional waters. The eight types of waters that are jurisdictional by rule are 1) traditional navigable waters, 2) interstate waters, 3) territorial seas, 4) impoundments of jurisdictional waters, 5) "tributaries", 6) "adjacent" waters, 7) case-specific waters having significant nexus alone and 8) case-specific waters having significant nexus in combination with similarly situated waters in the region.

The following chart provides some information on how the new final rule which will be or was effective 28 August 2015 changed from the old rule for different types of waters of the US. The chart was adapted from an EPA fact sheet (Fact Sheet, Clean Water Rule at www.epa.gov/cleanwaterrule)

	Water Type:	Old Rule:	Final Rule:
1	Navigable Waters	Jurisdictional	Same
2	Interstate Waters	Jurisdictional	Same
3	Territorial Seas	Jurisdictional	Same
4	Impoundments	Jurisdictional	Same
5	Tributaries to the Traditionally Navigable Waters	Did not define tributary	Defined tributary as a water feature that shows signs of a bed, bank and ordinary high water mark and flow downstream. It also states that wetlands and open waters without the signs will be evaluated for adjacency.

6	Adjacent Wetlands/Waters	Included wetlands adjacent to the types of waters listed as 1, 2, 3, 4 above and included wetlands	Includes waters adjacent to jurisdictional waters within a minimum of 100 feet and maximum of 1500 feet. Also waters within the 100-year floodplain of these waters.
7	Isolated or "Other" Waters	Included all other waters whereby the use, degradation or destruction of which could affect interstate or foreign commerce	Includes specific waters including Prairie potholes, Carolina and Delmarva bays, pocosins, western vernal pools in California and Texas coastal prairie wetlands when they have significant nexus. This further includes waters with a significant nexus within the 100year floodplain of waters listed as 1, 2, and 3 along with waters with significant nexus within 4,000 feet of jurisdictional waters.
8	Exclusions of the definition of "Waters of the U.S."	Excluded waste treatment systems and prior converted cropland	Categorically excluded those on old rule but added groundwater, gullies, rills, erosional features and non-wetland swales. It further excludes and expands two types of ditches along with components for MS4s and water delivery/reuse.

This chart was adapted from a Fact Sheet produced by EPA on the Clean Water Rule website.

For Agriculture the Rule states (according to the Federal Register) that the following Does or Does Not occur:

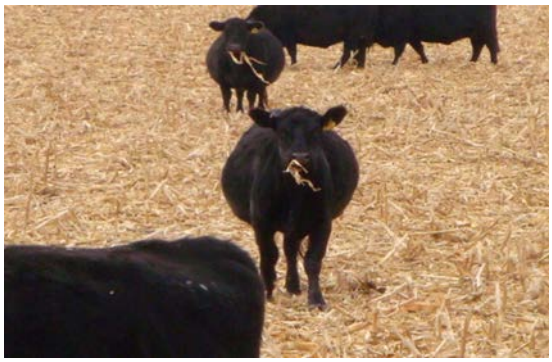
The RULE **DOES** continue the exemptions from permitting for (as stated by Congress under the Clean Water Act section 404) and further includes:

- Normal farming, ranching and silviculture activities (including seeding, harvesting, cultivating, planting which are established and on-going)
- Soil and Water Conservation Practices in dry land
- Agricultural stormwater discharges
- Return flows from irrigated agriculture
- Farm pond or irrigation ditch construction and maintenance on dry land
- Prior converted cropland
- Shallow subsurface connections to groundwater
- Groundwater
- Erosional features
- Waste treatment (including treatment ponds and lagoons)
- Irrigated areas that are normally dry without irrigation
- Water holding features constructed on dry land to be used for rice, stock watering, irrigation or looks
- Water holding features used during construction
- Gravel, sand or fill pits
- Grass swales

The RULE **DOES NOT** change anything that currently is permitted or exempted in any sub-parts of the Clean Water Act..

Using Corn Crop Residues in Southeastern Beef Production

By: J.R. Segers, Assistant Professor and Extension Animal Scientist, University of Georgia



Spring is just around the corner! For those with As summer draws to a close in Georgia, most of the state's agricultural operations are preparing or have already begun to harvest row crops. Harvest season brings long work days, and, hopefully, cooler temperatures, as well as, a new crop of goods to sustain us through the coming year. But along with the harvest of many of Georgia's native commodities come the availability of byproducts associated with those cropping systems that can be used. Agricultural production in Georgia is extremely diverse and leans heavily on crops such as cotton or peanuts both of which have been the subject of previous articles. Corn production is also common in Georgia and ranges in size from very large to only a few acres. Many Georgia producers are accustomed to making use of crop residues from peanuts and even cotton; however, the use of corn crop residue in the Southeast is limited compare to other parts of the U.S. Corn fields produce a great deal of forage which can be used to provide nutrition of cattle through the fall and winter months. Obviously we are not talking about forage of the quality we find in our cool-season annuals, but if corn stover is available it can be used supplement energy in dry pregnant cows during the fall.

Corn stover is different than most forages being used on beef cattle operations in the Southeast. The reason for this is two-pronged. The forage is already dead similar to stockpiled bermudagrass, but, unlike other warm season grasses, corn stover is made up of components which are much larger in size. The increased size of the components makes corn stover readily sortable, and this leads to preferential consumption of the components. Preferential consumption means the animals will consume the available material based on palatability: grain first, then husks and leaves, followed by the cobs and finally the stalk. In the case of corn crop residue, palatability mirrors the digestibility and potential energy value. In the case of a crop residue, we also must consider there is no potential for regrowth, so 100% of the forage available for the grazing period is present on the first day cattle are allowed to access the stover. Preferential

grazing along with little or no regrowth potential creates a situation where nutritional quality will decrease much more rapidly than in systems where animals are grazing fresh forage. Cattle will begin to lose body condition as the grazing season progresses if some form of intake management is not employed.

Table 1. Nutrient Composition of Corn Crop Residues*

	Dry Matter, %	Avg. Crude Protein, %	Avg. IVDMD**, %
Grain	73	10.2	91
Leaf	76	7.0	58
Husk	55	2.8	68
Cob	58	2.8	60
Stalk	31	3.7	51

*Adapted from 'Grazing Crop Residues', University of NE publication EC 98-278-B

**IVDMD – in vitro dry-matter digestibility. IVDMD is an approximation of TDN.

Grazing Corn Stalks

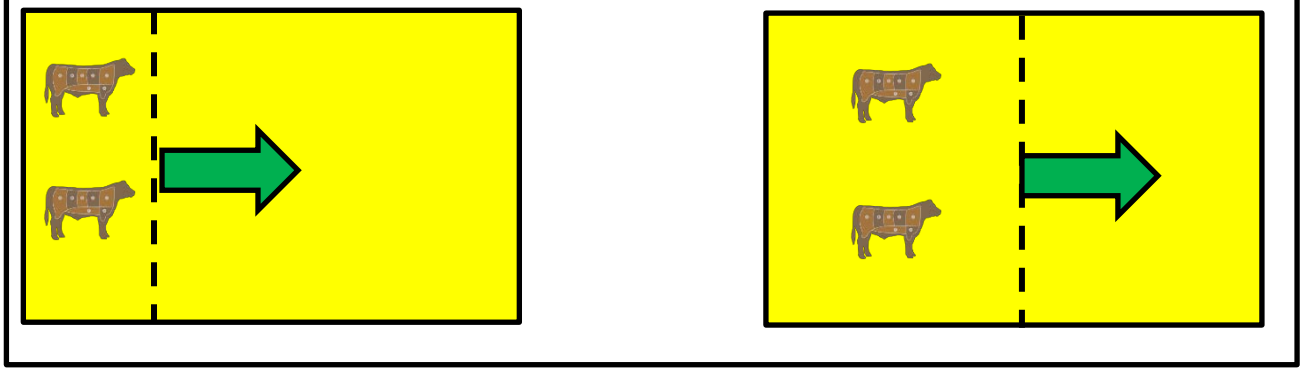
Grazing and bale feeding are the two mechanisms by which corn stover is typically fed. Grazing is by far the more popular method wherein cattle are turned out onto a corn field after harvest. Approximately 50 pounds of residue will be left on the field per bushel of corn harvested. Of this, it has been illustrated that cattle will only remove about 25% of the material left in the field resulting in no measurable effect on the fertility of the field in subsequent crop years. For example, let's take an acre of corn which yielded 200 bushels per acre. There should be 10,000 pounds of residue remaining because 200 bu/ac x 50 lbs residue/bu =10,000 lbs residue. Cattle will likely only consume 25% of the available dry matter, so 10,000 lbs x 0.25 = 2,500 lbs of residue available. The remaining 7,500 pounds will be reclaimed by the soil as plant material. Many corn producers are reluctant to graze or allow neighbors to lease fields for grazing because of fears about soil compaction. While some conflicting data exists, most of the literature indicates that grazing for 90 days or less has no measurable impact on soil compaction over the entire field. Common challenges with grazing corn fields include fencing, water availability, and protein and mineral supplementation.

Fencing

Most producers consider fencing a challenge as they don't want to permanently fence their fields. For most herds high-tensile wire and a solar powered fence charger will handle the job without much labor. It is also wise to consider a frontal grazing method to better manage intake and maintain quality of the available residue. Frontal grazing involves using a single strand of

electric wire to limit the animal's access to only a section of the field at a time. When the cattle have consumed the grain, husks and leaves (approx. 25% of available dry mater) from the aforementioned section, move the fence and allow access to additional section. This prevents preferential grazing of the entire field and allows for better maintenance of body condition over the course of the grazing period.

Figure 1. Frontal Grazing



Water

Most corn fields in Georgia are not equipped with livestock watering systems; however, irrigated fields may provide opportunities to water cattle from an irrigation well. Installation of a temporary watering system is not difficult if the well is nearby. On dry-land fields, development of a watering system may be possible if there is an existing water source nearby, but this will often prove to be less economically feasible than simply transporting water to the cattle for the length of time the cattle are grazing stover.

Protein and Mineral Supplementation

Corn stover is inherently deficient in protein, most minerals and vitamin A. At the onset of grazing, it is possible for protein levels to be adequate for a dry, gestating spring-calving cow, but as preferential grazing occurs along with weathering and trampling the protein concentration in the forage will decline well below the requirement of the cattle. Supplementing protein and minerals is essential when using corn stalks as a feed source. Protein supplementation options vary, but typically supplementation with a commodity mix will be the most economically feasible. The frequency of supplementation can be changed as well. If your county agent or nutritionist determines that your animals need 4 pounds of supplement per day, 8 pounds delivered every other day will not affect performance. A word of caution to those wishing to use distillers dried grains with solubles or whole cottonseed as a supplement. While supplementation

of protein can be delivered every second or third day, the fat concentration of the supplement does not need to exceed 5% of the total diet or fiber digestibility can be affected. This is especially true in this case, where the quality of the stover is relatively low already. Mineral mixes can be offered free choice or mixed with protein supplement. Again, be careful with supplementation frequency if mineral is included in the protein supplement as salt level can effect intake. Also

Harvested Corn Stalks

When stalks are baled we see a larger impact on soil fertility in subsequent seasons because the baler is much more efficient at removing dry matter form the field. Feeding baled stalks present much the same challenges as grazing. Animals consume plant parts preferentially often resulting in a lot of waste. Simply waiting for a group of cattle to clean up a corn stalk bale can result in decreased body condition over the feeding period as the cob and stalk are not palatable enough to encourage reliable consumption. These issues can be minimized by grinding bales with a supplement to make a more homogenous ration, but in most cases the time and labor associated with this level of processing is not feasible for the average cow herd.

If you have questions regarding the use of corn or other crop residues in your fall and winter feeding program, contact your local county extension agent at 1-800-ASK-UGA-1.

Don’t Forget About the Minerals!!!

By: Lawton Stewart, Associate Professor and Extension Animal Scientist, University of Georgia

I have heard several comments that producers are cutting phosphorus out of their mineral because they are using poultry litter as fertilizer. Although there is potential to improve the P levels in forage with litter, assumptions are being made on the ability of the plant to make the P available to the animal. This is one of the examples of how we need to make sure we’re cutting cost and not cutting corners in our production system. In fact, some producers may cut minerals out all together to help cut cost because performance does not appear to change. Short term maybe, but the long term consequences may be more costly. If you look at a cow/calf annual budget, minerals represent only about 3.5%; a very small cost to insure health and performance. The greener pasture we’re seing may reduce the feed bill, but we need to remember many forages in the Southeast are deficient in several minerals. Although minerals represent a small cost in your total budget, we can cut some extra expenses by taking a second look. We can learn a lot by getting our forages tested and reading the mineral tag.

Forage Testing: This is the cheapest initial investment you will make. We have to have a starting place if we want to know what minerals, and how much, we need in our minerals.

1. Calcium and Phosphorus: These are two macro minerals that need to be addressed together due to their interaction in biological processes. On well managed pastures, forages are typically close to meeting the requirement of brood cows, but are deficient for growing cattle. However, almost as important as the quantity of these is the ratio between the two. The ratio of calcium to phosphorus need to be greater than 1.5:1.
2. Sodium and Chlorine: More commonly referred to as salt, these minerals are the only ones cattle will crave and need to be offered daily.
3. Magnesium: This is a crucial mineral when cattle are transitioning into and during lactation. Generally, extra Mg is only needed during this lactation while grazing

lush pastures. Often times, producers do not realize they are feeding Mg unnecessarily through the summer.

4. Sulfur: Although S is essential, it is not usually limiting in the diet. However it may be present in mineral mixes due to inclusion of other minerals as sulfates. The concern with sulfur is its antagonism with copper, selenium, and the B vitamin thiamin. Therefore, it sometimes is necessary to feed additional copper and selenium to compensate this antagonism.
5. Micro minerals: These are minerals needed in smaller amounts such as copper, zinc, and selenium. Most forages are deficient in these minerals and need to be offered as a trace mineral pack.

Read the Mineral Tag:

1. You can learn a lot by reading the mineral tag. Usually, the mineral company makes mixes to fit general needs. Some of these may fit your operation, however, there may be times you're paying for ingredients you don't need and/or not getting what you need.
2. Check for the right mineral levels. Going back to our forage test, make sure you are getting the appropriate levels of each mineral and Ca:P ratio. Also, if a supplement is being used, make sure you consider the mineral content. For example, if distiller's grains or corn gluten feed is being utilized, P should be adequate, but Ca should be supplemented to maintain the proper Ca:P ratio.
3. Look for additives. Often additives such as ionophores (Rumensin, Bovatec), antibiotics (chlortetracycline, GainPro), and fly control compounds (IGR) are administered through mineral mixes. Although these may improve performance, they may not be wanted in your operation and come at additional cost.

If you local feed store doesn't provide the mineral that fits your production system, many will work with you to formulate a custom mix that will provide the nutrients you need and may decrease cost. The following table presents an example of a free choice mineral for lactating cows grazing bermudagrass pastures.
Remember, our goal is to cut cost and not corners to survive in the cattle business these days. For a complete description of both macro and micro please refer to the UGA publication 'Mineral Supplements for Beef Cattle' (http://pubs.caes.uga.edu/caespubs/pubcd/B895/B895.htm

Table 3. Example free-choice mineral for lactating cows.

Mineral	Amount
Calcium	9-12
Phosphorus	6-8
Salt	15-20
Magnesium	1%
Sulfur	0.5%
Copper	1200 ppm
Zinc	3000 ppm
Cobalt	10 ppm
Iodine	80 ppm
Selenium	26 ppm

Protecting Water Quality on Your Farm

By: Gary L. Hawkins, Ph.D., Water Resource Management and Policy Specialist, Department of Crop and Soil Sciences, University of Georgia, Athens

Water quality is a concern for everyone that uses a waterbody. These waterbodies can be a small stream, a creek, a river or a water storage facility such as a pond or reservoir. No matter what type of waterbody you have on your property or downslope of your property protecting water quality should be on your mind. I am not an animal health person, but good quality water can help your livestock increase weight, require less medication and overall be healthier. So what can be done to protect water quality for your animals as well as those downstream or downslope of your property?

First, let's look at the water supply you are using. Does your water supply consist of the stream or creek that runs through your property? And further, do you allow your animals to get into the stream wherever they can? Animals can contribute to the degradation of water quality on your farm by forming lanes where erosion can increase sediment concentrations. This sediment can cause many problems downstream such as increasing turbidity of the water which can directly affect the fish population if a large enough stream. The sediment can also contribute to clogging of culverts and hence lead to flooding on or off of your property. Besides sediment caused by erosion, if you notice the animals linger in the water (like a swimming pool) especially on those hot summer days, they can be degrading the water quality by defecating or urinating in the water. The introduction of waste materials will degrade the water quality for those animals drinking immediately downstream or on other parts of farm or off-farm. So, to protect water quality while still providing your animals with water from the stream or creek, I would suggest fencing the animals out of the stream and installing a Stream Crossing in a sunny area. Fencing keeps the animals away from the water and stream crossings are ways to provide a protected area for animals to access the stream or creek to get water, while also reducing the potential of degrading the water quality. As a guide and potential cost-share from USDA-NRCS, Stream Crossings are described in the NRCS standards as practice number 578. If you work with NRCS, there may be funding available to assist you in installing both fencing and a stream crossing to protect water quality. If you do not work with NRCS, the standards for both fencing and stream crossing will provide a guide to design and install the practice for protecting water quality on your farm. I mentioned placing the crossing in a sunny area. The purpose of placing the crossing in a sunny area is to allow the animals time to get water but reduce the time they are in the sun and hence reduce the potential of degrading the water quality.

Secondly let's look at nutrient management. If you collect and/or spread animal waste as a source of nutrients be aware of where you are and when you are spreading the waste. When spreading the waste material keep a safe distance away from waterbodies to prevent direct application of waste into the waterbody. Also, leaving a buffer between the area of waste application and the waterbody allows the plant material in the buffer area to use the nutrients that runoff the application area prior to entering the waterbody. Also applying the waste material at a time when the soils are best suited to accept the waste is critical. This would mean not applying waste materials when the soil is frozen or waterlogged. In either case, the waste material cannot be assimilated by the soil and therefore has the increased potential of running off into the local waterbody. When applying waste materials also be aware of the concentrations and only apply an amount of waste material to meet the nutritional needs of the plant on the land where the waste is being applied. This matching the plant needs to the nutrient concentration of the waste will reduce the potential of degrade water quality downstream of the field or pasture. As above, a guide to applying nutrients can be found in the NRCS Standard for Nutrient Management (Practice 590). You can also work with a Certified Nutrient Manager to assist you in developing a Nutrient Management Plan to protect water quality. Like animal waste, the application of synthetic fertilizers can also contribute to degraded water quality if not applied in a proper fashion to provide buffer areas or applying without considering plant requirements.

Overall, water quality can be a direct link between how you manage your animals from the water source they use to how manure or fertilizer is applied. So, as you manage your animals or waste, think of how their management will affect water quality of the waterbody on your farm. This can be the same waterbody that is used for watering animals, fishing for an evening meal, swimming on a hot summer day or just a peaceful place to sit in the shade of a tree and think. If you have questions about the ways to protect water quality on your farm please see your local County Extension Agent. They can be reached by calling 1-800-ASK-UGA1.

Low-Stress Cattle Handling Affects Beef Quality

By: Carole Knight, Bulloch County Extension Coordinator, UGA Beef Quality Program Coordinator

Stress is defined as a state of mental or emotional strain or tension resulting from adverse or very demanding circumstances. Stress in cattle is often created by environmental conditions (heat, cold, humidity, dust, mud), facilities, handling, nutrition and health effects. Working cattle is notability one of the most stressful times for cattle and handlers. Cattle experts emphasize the need and advantages to utilizing proper animal handling techniques and low-stress protocols for moving and working cattle. Chronic stress on cattle can have serious detrimental effects on their health, productivity and welfare. Research has shown that stress, like what occurs during handling and transport, can decrease feed efficiency, leading to reduced gains. Stress can lower conception rates. It can also reduce immune and rumen function. All of these factors take a toll on the profitability and sustainability of the operation. But, in terms of meat quality, does low-stress handling really make a difference?

The quality and safety of beef is greatly influenced by the management of the stresses associated with production, transport and harvest. Minimizing pain, fear and injuries requires calm, quiet handling and can improve many of the resulting quality defects.

One defect that is a result of poor handling practices is bruising. This can be caused by poor facility design, rough or aggressive handlers, improper use of handling tools, horned animals or mixing unfamiliar cattle. Bruising is a common cause of meat wastage. Bruising occurs when blood escapes from damaged blood vessels into the surrounding muscle tissues. This muscle then becomes unacceptable for use and has to be trimmed from the carcass.

Another quality defect that is associated with stressful handling is dark cutters. Dark-cutting beef carcasses produce meat that is dark, firm, and dry, and results in significant economic losses. Dark cutters are caused by stress, which depletes muscle glycogen stores. Without sufficient glycogen in the carcass, lactic acid cannot be produced to reduce the pH of the meat. The higher pH in the beef causes an increase in light absorption and

water-binding abilities resulting in a dark, firm and dry surface. In addition, the shelf life of the meat is reduced by the higher pH, because it is more hospitable to bacterial growth. Weather, genetics, disposition, and poor handling practices before harvest all play a role in causing dark cutters.

Often the hide quality of a beef animal is overlooked, but hides have the highest values of any product of slaughter animals, other than the carcass. Useful leather can be made only from undamaged and properly treated skins. Careless damage to hides costs the industry much loss. Damage can be caused by injuries from whips, sticks, horns, unsuitable handling facilities, and badly designed and constructed transport vehicles.

In addition to improving public perception of the cattle industry, low-stress handling provides a direct benefit to the producer. Improved handling alleviates unnecessary stress (and stress's inherent productivity losses) to the animal and allows the producer to move cattle more efficiently and effectively. Low-stress cattle handling is an economically sound business decision, as well as an animal welfare issue. Aggressive handling of cattle can result in bruising and damage which lowers carcass value in addition to causing stress which can impact the animal's overall health. Some stress is inevitable and expected. The goal for every producer is to recognize the areas of their operation where stress on the animal can be minimized and work to reduce this drain on performance and profits..

Feeder Calf Grading Fundamentals

By: Jason Duggin, Beef Extension Specialist and Lawton Stewart, Beef Extension Specialist

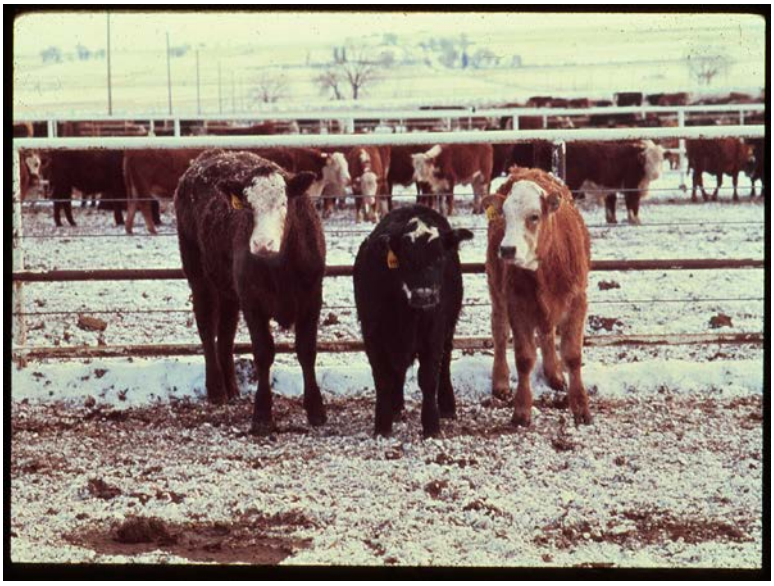
Feeder grades offer consistent communication between the producer and other segments of the beef industry including the stocker / backgrounders and feedlots. Feeder grades also give producers target production goals and a realistic view of the general acceptance of the product that is being marketed. The terminology of the feeder cattle market chain can be vague and challenging to understand for the novice and even experienced cattlemen. The reason being is that it is rarely explained and the message is not often conveyed clearly or consistently. Beef producers are often skeptical as to why their cattle or individual calves have sold for less money than others. Understanding feeder cattle grading standards will help the beef cattle producer more clearly understand the value differences among cattle types. Many variables equate to calf value. Feeder cattle value determining factors include:

Table 1:

Feeder Cattle Value Determining Factors

- ✓ Frame
- ✓ Muscling
- ✓ Sex Classification (Steer, Heifer)
- ✓ Flesh
- ✓ Breed
- ✓ Background
- ✓ Weight
- ✓ Color
- ✓ Fill
- ✓ Vaccinations
- ✓ Horns
- ✓ Personal Preferences

Many of the factors listed are obvious at first glance. However, frame and muscling, in particular, are predictive variables as to how the calf will perform and grade once harvested at the packing plant. In other words, lightweight feeder cattle can be assigned grades and scores to assess potential carcass value. These grades typically coincide with live animal performance and value. This article will only address thriftiness, frame, muscling, flesh, and sex.



The three calves pictured were born the same day. Although they are the same number of days old, the number of days on feed will range as much as 100 days or more to achieve a similar carcass endpoint. If the potential weight gain is negligible for the next segment of the industry, less profit potential exist. Conversely, if the animal must be fed to an endpoint out of industry acceptability to achieve ideal carcass merit, potential buyers will also discriminate. Thus, a frame score can help communicate the potential value differences that exist between each calf for the buyer and seller.

Thriftiness

Feeder cattle must be deemed thrifty in order to receive frame and muscle scores. Thrifty is a term used to describe cattle that can grow and develop normally according to beef industry expectations for growth and marbling. Unthrifty cattle are either unhealthy or genetically unfit for optimum growth and development of marbling. Examples of unthrifty cattle are those with double muscling, severe emaciation, or a leg injury that would prevent proper weight gain. Neither example would fit the USDA frame score standards. Cattle that are determined to be unthrifty are graded U.S. Inferior. If a calf completely recovers from a disease or injury they can be graded at that time.

Frame Score

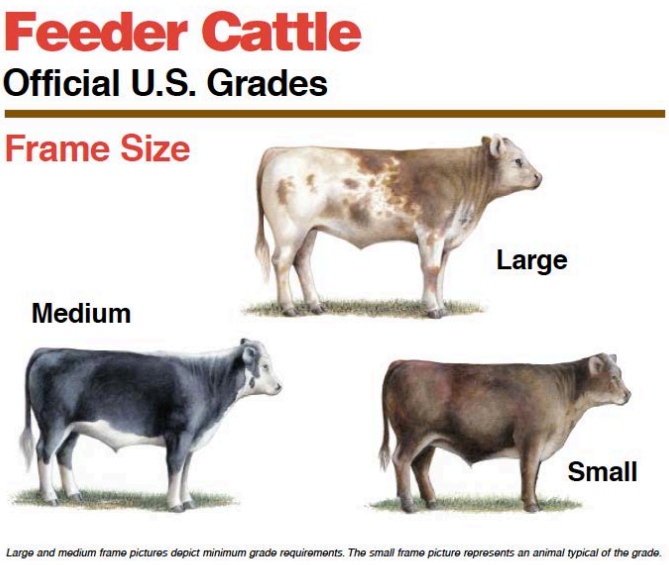
The USDA feeder cattle frame scores are small, medium, and large and are noted as S, M or L in conjunction with it's muscle score. Larger frame cattle have a higher rate of gain, require more time on feed, and will attain a heavier slaughter weight. Depending upon feed prices and cattle supply, the demand for larger frame cattle can vary slightly, but typically, upper medium to lower large framed cattle have reaped the highest prices compared to lower medium and smaller framed cattle. The key to understanding how frame-scoring works is to understand what frame scores ultimately predict. Frame scores predict the potential weight range of a given steer or heifer when they have reached their compositional endpoint of around 0.5 inches of external fat and potentially grade low choice or higher if genetics allow.

Table 2:

Frame Score as a Predictor of Final Harvest Weight

	Steer (lbs.)	Heifer (lbs.)
Large	1250 or >	1150 or >
Medium	1100 to 1249	1000 to 1149
Small	< 1100	<1000

Figure 1:

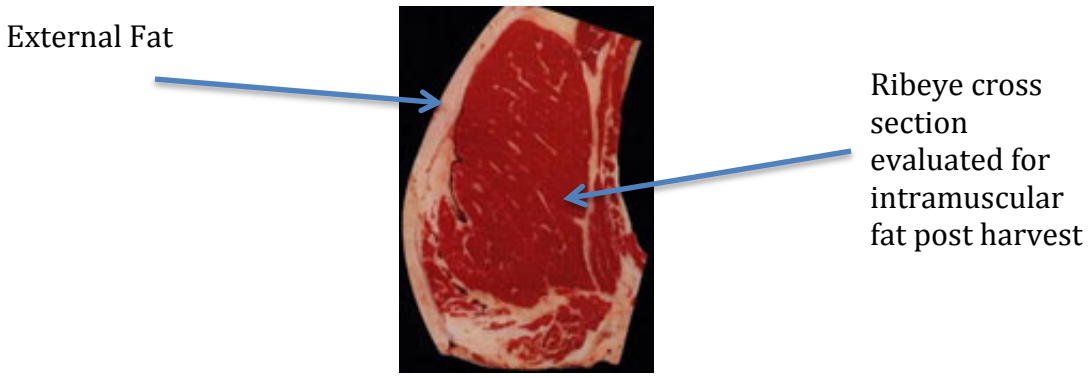


Source: www.ams.usda.gov

Large framed cattle are those that are expected to weigh over 1250lbs. when their external fat is approximately 0.5 inches. at the 12th rib where beef carcasses are "ribbed" for grading purposes. The 0.5-inch target is used in the USDA standards as a reasonable live animal predictor for a calf's ability to grade choice or higher.

Figure 2:

USDA Photographic Standard for Low Choice Marbling



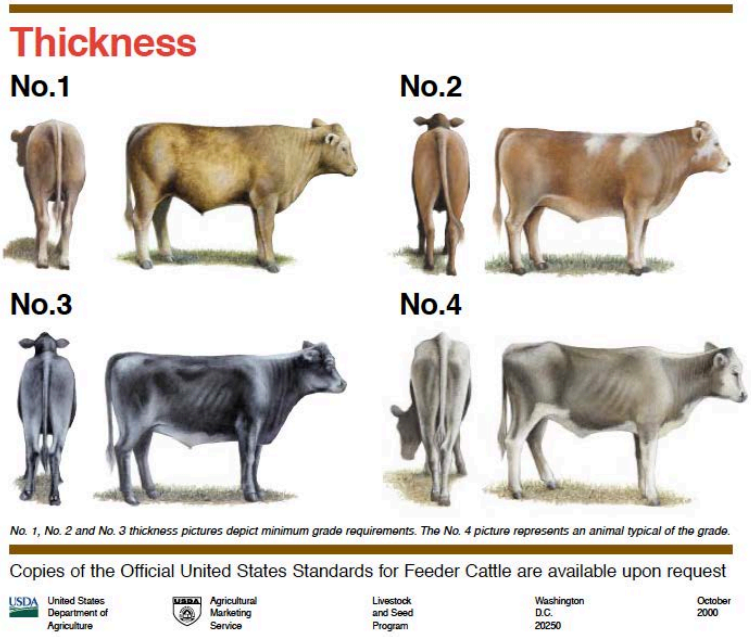
Cattle buyers that are looking at 500 lb. feeder calves are evaluating the growth indicators that help predict final endpoint weight. Buyers and graders use a combination of the criteria in Table 2. For example, a 500 lbs. feeder with a long coarse tail, large head, and wide muzzle relative to other cattle indicate that the calf is smaller framed and will have less genetic ability for gain. A long bodied, short tailed, fine haired calf weighing 500 lbs. should have more gain potential and ultimately have a higher yielding carcass with less trimmable waste. Generally, large framed cattle have lower quality grades compared to smaller framed cattle, which drives the need for genetic selection for marbling. Quality grades have improved dramatically due to selection. Backgrounders, stocker operators and feedlots all have the potential to profit from potential gains of larger framed versus smaller framed cattle. Small-framed cattle will generally receive much lower prices throughout the beef chain; have lower yielding carcasses with more trimmable fat.

Muscle Scoring

USDA feeder cattle muscle scores are either 1, 2, 3, or 4 based on subjective assessment of a trained grader or used as common terminology amongst buyers and sellers with a lower number indicating more muscling and generally considered to garner more value. Feeder cattle with a muscle score of 1 are highly marketable cattle that are expected to have a larger ribeye, less fat and consequently a more desirable yield grade.

Figure 3:

USDA Feeder Cattle Muscling Scores



Source: www.ams.usda.gov

Muscle thickness refers to the development of the muscle system. A muscle score (MS) 1 is described as moderately thick and comprised predominately of beef breeding. A MS 2 is described as slightly thick and with high proportion of beef breeding. A MS 3 is described as thin throughout with the legs close together. The MS 4 score was added with the year 2000 standards revision. An MS 4 is described as having less thickness than a MS 3. Cattle receiving a MS 3 or 4 would have a dairy type appearance. A MS 4 is not common.

Summary

Feeder cattle buyers, marketers, and producers are able to more fully communicate the potential growth and carcass merit attributes of individual and grouped calves under 36 months of age using the USDA Feeder Cattle Grading Standards. Producers that are

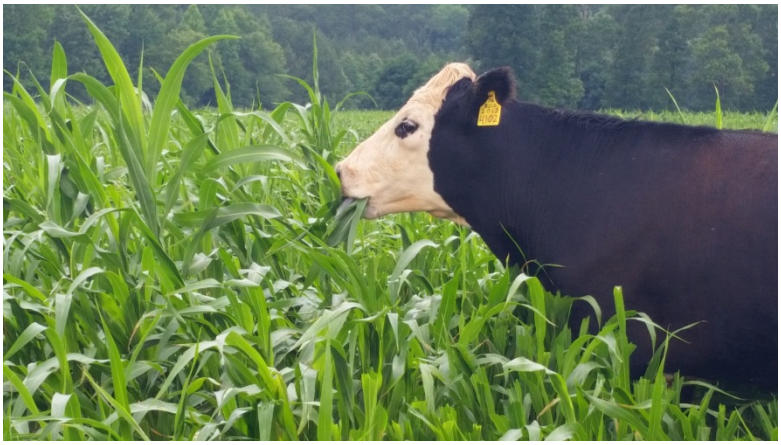
more acutely aware of the feeder grade standards can target their individual production goals toward higher premiums while avoiding mating's and management practices that would be discriminated against by buyers. For more information on feeder cattle grading, contact your local Extension Office (1-800-ASK-UGA-1).

Summer Annual Forages in Livestock Systems

By: Deidre Harmon, Graduate Student, Crop and Soil Sciences

Gearing Up For Summer Grazing

Although summer has come and gone, and winter is knocking on our door, it is never too early to start talking about the use of alternative summer annual forages in your 2016 summer grazing system. Summer annuals such as millets, forage sorghum, and sorghum x sudangrass hybrids, are great alternatives for beef cattle producers who are looking to renovate pasture land, increase forage quality and yield, or simply fill the "summer slump" gap in their grazing systems.



Summer annual forages are well adapted to the warm climate of the southeastern U.S. and generally perform best in well-drained soils. A key advantage to the use of these forages in a grazing system is that they are very drought tolerant and can perform well during periods of little to no rainfall. In contrast to cool-season forages, warm season grasses are most productive when daytime temperatures approach 90 degrees Fahrenheit, and they have the ability to produce ample amounts of tonnage in a relatively short time. With proper management, summer annuals can produce over 6 tons/acre and, depending on the species and variety, can be harvested or grazed multiple times throughout the growing season.

If the decision has been made to use summer annuals in your livestock grazing system, it is important to book your seed early and to choose a variety that will work well for your area and your level of management. Each year, the University of Georgia conducts statewide variety testing trials on some of the most popular varieties of summer

annuals. Trial results dating back to 1997 can be found on the College of Agricultural and Environmental Sciences website. It is recommended to investigate the results before deciding upon a variety.

Current Summer Annual Grazing Research

Over the past decade, consumer interest in the fat content of food has led to an increased demand for forage-finished or grass-fed beef products. This interest in grass-fed beef has primarily been stimulated by reports that grass-fed beef is leaner and has greater concentrations of n-3 fatty acid and conjugated linolenic acid (CLA) than conventional grain-fed beef. In Georgia, consumer preference has led to a niche market for grass-finished beef and many cattle operations have become interested in meeting that demand.

The mild climate and long growing season of Georgia makes it an ideal location for grass-finishing beef. However, the system is not as simple as just growing and grazing grass. The forage must be both highly digestible and nutritious in order for the animal to rapidly lay down both fat and muscle. Although the use of cool season annuals and perennials provide high quality forages for finishing cattle during the fall, winter, and spring months, there are less forage options available for grass-finishing beef during the summer period. Typically, most beef operations in the southeast take advantage of the high yields of warm season perennial species such as bermudagrass and bahiagrass. However, these species do not contain adequate nutrition for producing high rates of body weight gains in a grass-finished beef production system. Instead, researchers at the University of Georgia are taking a systematic approach at testing the effects of four different warm season annual forages. The goal of the project is to determine the summer annual(s) that is most effective at producing grass-finished beef from the standpoints of forage yield and quality, animal nutrition and performance, and meat quality.

The four year project includes the use of

four summer annual grasses; pearl millet, a mixture of pearl millet and crabgrass, sorghum x sudangrass, and brown midrib sorghum x sudangrass. These species were selected for this research because of their widespread use, known forage quality, and drought resistance. In total, there are 32 acres, or 8 acres per species, assigned to one of the four forages. These steers will graze the grass for around 85 days, or from mid-June through mid-September. During this time, average daily gain (ADG) will be monitored and carcass measurements of ribeye area, backfat thickness, intramuscular fat, and rumpfat will be taken using ultrasound technology. Each September, the steers will be harvested at the UGA Meat Science and Technology Center where samples will be pulled from the carcasses and evaluated for composition and quality. Beef from this year's trial is available for purchase at the UGA Meat Science Technology Store on the main campus in Athens. All proceeds from meat sales will be used to fund this research. For more information about the UGA Department of Animal and Dairy Sciences visit ads.uga.edu, and for more information about the UGA Forages program visit georgiaforages.com.